National Institute of Environmental Health Sciences

# Variation of daily warm season mortality as a function of micro-urban heat islands

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**Abstract:**

Background: Little attention has been paid to how heat-related health effects vary with the micro-urban variation of outdoor temperatures. This study explored whether people located in micro-urban heat islands are at higher risk of mortality during hot summer days. Methods: Data used included (1) daily mortality for Montreal (Canada) for June-August 1990-2003, (2) daily mean ambient outdoor temperatures at the local international airport and (3) two thermal surface images (Landsat satellites, infrared wavelengths). A city-wide temperature versus daily mortality function was established on the basis of a case-crossover design; this function was stratified according to the surface temperature at decedents' place of death. Results: The risk of death on warm summer days in areas with higher surface temperatures was greater than in areas with lower surface temperatures. Conclusions: This study suggests that measures aimed at reducing the temperature in micro-urban heat islands (eg, urban greening activities) may reduce the health impact of hot temperatures. Further studies are needed to document the variation of heat-related risks within cities and to evaluate the health benefits of measures aimed at reducing the temperature in micro-urban heat islands.

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## Resource Description

**Exposure :**

weather or climate related pathway by which climate change affects health

Air Pollution, Temperature

**Air Pollution:** Ozone

**Temperature:** Extreme Heat

**Geographic Feature:**

resource focuses on specific type of geography

Urban

**Geographic Location:**

resource focuses on specific location

Non-United States

**Non-United States:** Non-U.S. North America

**Health Impact:** ☑

specification of health effect or disease related to climate change exposure

Cardiovascular Effect, Morbidity/Mortality, Respiratory Effect

**Cardiovascular Effect:** Other Cardiovascular Effect

**Cardiovascular Disease (other):** cardiovascular disease motrality

**Respiratory Effect:** Other Respiratory Effect

**Respiratory Condition (other) :** respiratory disease mortality

**Population of Concern:** A focus of content

**Population of Concern:** ☑

populations at particular risk or vulnerability to climate change impacts

Elderly, Low Socioeconomic Status

**Resource Type:** ☑

format or standard characteristic of resource

Research Article

**Timescale:** ☑

time period studied

Time Scale Unspecified